Revised (01/06)

DEPARTMENT OF THE INTERIOR – AVIATION MANAGEMENT

AIRCRAFT RENTAL AGREEMENT PROVISIONS: SUPPLEMENT NO. 15

SPECIAL USE - INTERAGENCY AIR TACTICAL

Definitions

Air Tactical: Aerial coordination and supervision provided by a trained Air Tactical Group Supervisor, to ensure safe aerial and ground suppression operations. Aircraft operations shall remain at a distance greater than 500 feet from the terrain. Aircraft approved under this Supplement are also approved to perform missions under Supplement #5, "Resource Reconnaissance" and Supplement #16 "Fire Reconnaissance".

B8.15.1 GENERAL – Refer to Section B1

B8.15.2 OPERATIONS – Refer to Section B2

B8.15.3 PERSONNEL REQUIREMENTS

B8.15.3.1 Pilots shall be knowledgeable of all mission-related tasks, i.e., mountain flying techniques, circling maneuvers over a point, and have a basic understanding of fire behavior.

B8.15.3.2 Pilots shall be required to demonstrate proficiency during an initial flight evaluation. The proficiency check may not be required if the pilot has been previously carded for fire reconnaissance, resource reconnaissance, or low level operations.

B8.15.4 EQUIPMENT REQUIREMENTS

B8.15.4.1 Aircraft shall meet the basic requirements for airworthiness and conditions as listed in Aircraft Rental Agreement (B4).

NOTE: First aid and survival kit are not required for this Supplement.

B8.15.4.2 **Strobe Lights.**

B8.15.4.2.1 Airplanes. A wing and tail strobe light system with an independent activating switch.

B8.15.4.2.2 Helicopters. A strobe light, with either a white, or ½ white and ½ red lens, mounted on top of the aircraft, or otherwise visible from above. If the aircraft certification requires the anti-collision light to be aviation red, then a white strobe light with an independent activating switch shall be provided in addition to the red strobe.

B8.15.4.3 Helicopters must have high visibility markings on the main rotor blades as specified in Exhibit 7.

B8.15.5 AVIONICS REQUIREMENTS

Note: Aircraft approved for Interagency Air Tactical (any Type) meet all requirements for, and may be used on Fire Reconnaissance and/or Resource Reconnaissance missions.

B8.15.5.1 The following systems, as a minimum, shall be installed or available in addition to the general requirements listed in the Aircraft Rental Agreement (B5). The avionics systems shall be maintained by the Vendor in accordance with the provisions of B5 and the installation and maintenance standards of Section B8.15.5.12. of this Supplement.

AIR TACTICAL AIRCRAFT AVIONICS REQUIREMENTS CHART

ALL TYPES REQUIRE ELT, TWO COMM'S, TRANSPONDER/ENCODER, AND IFR PITOT/STATIC TESTS

AIR TACTICAL TYPE	2 ANTENNAs, 3-Pin Pwr, Ckt Bkr	VHF-FM RADIOS	AUX-FM Prov.	GPS portable	GPS pnl mnt	AUDIO SYSTEMS	XMIT Positions	INTERCOI Positio:
I	N/A	2	1	N/A	1	2	3	4
II	N/A	1	1	N/A	1	2	3	4
III	N/A	1	N/A	1	N/A	1	2	2
IV	1	N/A	N/A	1	N/A	1	2	N/A

REFERENCE: B8.15.5.4 - B8.15.5.5 - B8.15.5.6-B8.15.5.7-B8.15.5.8-B8.15.5.9-B8.15.5.10-B8.15.5.11

DETAILED REQUIREMENT SPECIFICATIONS AND ANY ACCEPTABLE SUBSTITUTIONS ARE LISTED AS PER THE BELOW
ALSO SEE B8.15.5.12 FOR TCAS/TAS/TCAD SPECIFICATIONS (IF FURNISHED)

Air Tactical aircraft shall be categorized into one of four types based on avionics equipment detailed in the chart above, and furnished as follows:

B8.15.5.2 **Avionics Requirements For ALL Air Tactical Aircraft:**

B8.15.5.2.1 An ELT meeting either TSO-C91a or TSO-C126 in accordance with B5.

B8.15.5.2.2 A second panel-mounted VHF-AM aeronautical transceiver (COMM--2) in addition to the transceiver specified in B5.

B8.15.5.2.3 One transponder and altitude reporting system meeting the requirements of 14 CFR Part 91.215 (a) and (b).

Plus the following, per the chart above:

B8.15.5.3 **TWO ANTENNAS, etc.(Air Tactical Type Four only)** Two broadband VHF-FM aeronautical antennas (Comant CI-177 or equivalent) operating from 150 to 174 MHz shall be installed on the aircraft. Each antenna shall be provided with coaxial cable (RG-58 A/U or better) terminated in a male BNC connector within the aircraft cabin in a location which facilitates connection to a unit mounted between the pilot and copilot/ATGS seats plus 4 feet (minimum).

B8.15.5.3.1 An accessory power source. An MS3112E12-3S type power connector protected by a 10 amp circuit breaker connected to the avionics or aircraft power buss shall be provided. The connector shall be permanently mounted in a location convenient to the copilot/ATGS. Pin A shall be +24 VDC in 24 volt aircraft, Pin B shall be aircraft ground and Pin C shall be +12 VDC in 12 VDC aircraft. NEVER apply power to both Pins A and C simultaneously.

B8.15.5.3.2 Although not a requirement, any aircraft equipped with a Vendor-owned “Air Attack Kit”, containing at least one VHF-FM radio meeting the requirements for such specified below (audio control system, ICS, etc.) to meet the requirements of Air Tactical Type(s) I, II, or III, shall be designated as “Air Tactical Type IV Plus Radio Kit”.

B8.15.5.4 **VHF-FM RADIOS** - aeronautical transceiver **(One each [FM-1]required for Air Tactical Types Two and Three, two each [FM-1, FM-2]required for Air Tactical Type One),** which provides selection of both narrowband (12.5 kHz) and wideband (25.0 kHz) bandwidth operation on each channel. Operation shall remain in the narrowband mode unless otherwise directed by the Government.

B8.15.5.4.1 The transceiver's operational frequency range shall include the band of 150 to 174 MHz. The transceiver's operational frequency range shall include the band of 150 to 174 MHz. The operator shall be able to program any of a minimum of 15 main preset channels with any usable frequency within that band while in flight. A programmable scan feature shall be provided for main preset channels in aircraft with only a single VHF-FM multi-mode aeronautical transceiver.

B8.15.5.4.2 Carrier output power shall be 10 watts nominal value (original design specification). The transceiver shall be capable of displaying receiver and transmitter operating frequency, and shall provide both receiver and transmitter activation indicators for main and guard. Simultaneous monitoring of both main (150-174 MHz) and guard (168.625 MHz) receivers is required**.** Single bandwidth guard receivers which operate in the wideband (25.0 kHz) mode are acceptable. Scanning of the guard frequency is not acceptable.

B8.15.5.4.3 CTCSS sub-audible tone encoder (which may be an integral part of the transceiver), with the lowest 32 TIA/EIA-603 tone frequencies being selectable, shall be interfaced to the above transceiver. It is desired that the encoder provide a display of the selected tone or tone frequency.

B8.15.5.4.4 Each VHF-FM transceiver/encoder system shall be programmed with Guard transmit and receive frequencies 168.625MHz and a 110.9 Hz CTCSS transmit only tone. Guard shall be monitored by the pilot during all ordered flight.

B8.15.5.4.5 The following models of VHF-FM aeronautical transceivers are known to meet the above requirements:

Eureka Radio ERS-96000NB w/external tone encoder
NAT (Northern Airborne Technology) NPX-138N-050
NAT (Northern Airborne Technology) NPX-138N-070
NAT (Northern Airborne Technology) NTX-138-050
Technisonics TFM-138 (serial number 1540 and up)
Technisonics TFM-138B/C/D (all)
Technisonics TFM-500 (all)
Technisonics TDFM-136 (all)
Wulfsberg RT-5000/C-5000 with Guard option
Wulfsberg RT-9600N w/C-962A control head

B8.15.5.4.5.1 Bendix-King/BK Radio model KFM-985 transceivers do not meet the referenced requirements for Interagency Air Tactical.

B8.15.5.4.6 Any digital aeronautical, mobile, or portable VHF-FM radios furnished to meet the requirements of this document shall also be APCO Project 25 (EIA/TIA-102) compliant.

NOTE: All future aviation contracts solicited by DOI (which are required to be VHF-FM radio equipped) shall be furnished with at least one P25, Phase-I (digital-capable) aviation radio by January 1, 2010. In aircraft required to be furnished with more than one VHF-FM radio, all such radios must be P25, Phase-I compliant by the January 1, 2010 date.

B8.15.5.5 **AUX-FM** - Provisions for auxiliary VHF-FM portable radio **(Air Tactical Types One and Two only):**

B8.15.5.5.1 The Vendor shall furnish the necessary provisions for installing and properly operating an auxiliary VHF-FM portable radio through the aircraft's audio control system(s). Provision shall consist of the appropriate wiring from the audio control system, terminated in an ITT/Cannon type MS3112E12-10S 10-pin connector conveniently located for use by the copilot/ATGS, and utilizing the contact assignments as specified by drawing FS/OAS A-17.

B8.15.5.5.2 One weatherproof, external, broadband antenna covering the 150-174 MHz band, with associated RG-58A/U (or equivalent) coaxial cable and connector, terminated in a bulkhead-mounted, female BNC connector (type UG-290A), conveniently located for use by the copilot/ATGS adjacent to the above 10-pin connector (Comant model CI-177or equal).

B8.15.5.5.3 Mounting facilities, in accordance with the specifications of FAA AC 43.13-2A, for secure installation of the auxiliary VHF-FM portable radio in the cockpit shall be provided. The location of the mounting facilities shall be such that, when connected with an 18-inch adapter cable, the radio's controls shall be convenient for the copilot/ATGS.

B8.15.5.5.4 Positive-polarity microphone excitation voltage shall be provided to the AUX-FM system from the aircraft DC power system through a suitable resistor network. A blocking capacitor shall be provided to prevent the portable radio microphone excitation voltage from entering the system. Sidetone for the AUX-FM shall also be provided (NAT model AA34-300, Premier model PA-34, or equivalent).

B8.15.5.5.5 In lieu of the AUX-FM requirements above, the Vendor may substitute an additional VHF-FM aeronautical

transceiver (FM-2 or FM-3) which meets the requirements (less guard) for a VHF-FM aeronautical transceiver, as specified in B8.15.5.5. above.

B8.15.5.6. **PORTABLE GPS (Air Tactical Type Three and Four only)** A Global Positioning System (GPS) unit shall be located conveniently for the pilot. If a "portable" type unit is furnished, it shall be securely mounted and equipped with an antenna mounted separately from the GPS receiver. Panel-mounted units shall be equipped with a fixed, external, aircraft antenna. All GPS units shall be equipped for manual entry of waypoints in flight, utilize the WGS-84 datum, reference latitude and longitude coordinates in the DM (degrees/minutes/decimal minutes) mode for aircraft positioning, and be powered by the aircraft electrical system.

B8.15.5.7 **One PANEL-MOUNT GPS unit (required for Air Tactical Types One and Two)** shall be permanently installed in the aircraft. The GPS shall be equipped for manual entry of waypoints in flight, utilize the WGS-84 datum, reference latitude and longitude coordinates in the DM (degrees/minutes/decimal minutes) mode for aircraft positioning, utilize an approved, fixed, external aircraft antenna, and be powered by the aircraft electrical system. The GPS installation shall be FAA-approved (or approval pending). Handheld, portable, and/or marine type equipment is not acceptable.

B8.15.5.8 **Audio Control Systems**:

B8.15.5.8.1 **SINGLE AUDIO SYSTEM (Air Tactical Type Three and Four only)** One audio control system, with two sets of JJ-033/JJ-034 headset jacks, shall be provided for the pilot and copilot/ATGS. The system shall provide pilot and copilot/ATGS with controls for selection of receiver audio outputs and transmitter microphone/PTT audio inputs for all installed radios. Transmitter sidetone audio shall be provided for the operator(s). The system shall also provide controls for adjustment of both ICS and receiver audio output levels. Labeling and marking of controls shall be clear, understandable, legible, and permanent. Electronic label maker marking is acceptable.

B8.15.5.8.1.1 Transmitter selection and operation. A transmitter selection control shall be provided for the microphone/PTT inputs of both pilot and observer/copilot. Whenever a transmitter is selected, the companion receiver audio shall automatically be selected for the corresponding earphone. Transmitter sidetone audio shall be provided for the users.

B8.15.5.8.1.2 Receiver selection and operation. Controls shall be provided for pilot or observer/co-pilot selection of audio from one or any combination of available receivers. The two aft seat passenger positions shall also monitor the receiver(s) as selected by the pilot or observer/co-pilot. The receiver audio output shall be free of excessive distortion, hum, noise, and crosstalk, and shall be amplified sufficiently to facilitate ease of use in a noisy cockpit/cabin environment.

B8.15.5.8.2 **DUAL AUDIO SYSTEM (Air Tactical Types One and Two)** Two separate audio control systems (which may be combined in a single unit) shall be provided for the pilot and copilot/ATGS. Each system shall provide pilot and copilot/ATGS with separate controls for selection of receiver audio outputs and transmitter microphone/PTT audio inputs for all installed radios. Each system shall also provide pilot and copilot/ATGS with separate controls for adjustment of both ICS and receiver audio output levels. Labeling and marking of controls shall be clear, understandable, legible, and permanent. Electronic label maker marking is acceptable.

B8.15.5.8.2.1 Transmitter selection and operation. Separate transmitter selection controls shall be provided for the microphone/PTT inputs of both pilot and copilot/ATGS. The system shall be configured so the pilot and copilot/ ATGS may each simultaneously select and utilize a different transmitter via their respective microphone/PTT. Whenever a transmitter is selected, the companion receiver audio shall automatically be selected for the corresponding earphone. Transmitter sidetone audio shall be provided for the user as well as for cross monitoring via the corresponding receiver selection switch on the other audio control system. The (aft) ATGS instructor position shall be equipped to utilize the transmit function as selected by the copilot/ATGS. Whenever the copilot/ ATGS selects a radio on which to transmit, the (aft) ATGS instructor's transmit function shall automatically be connected to the same radio. A separate (third) audio control system for the (aft) ATGS instructor position is an acceptable alternative.

B8.15.5.8.2.2 Receiver selection and operation. Separate controls shall be provided for both pilot and copilot/ATGS selection of audio from one or any combination of available receivers. Any ICS-equipped aft passenger positions shall monitor the receiver(s) as selected by the copilot/ATGS. The receiver audio output shall be free of excessive distortion, hum, noise, and crosstalk, and shall be amplified sufficiently to facilitate ease of use in a noisy cockpit/cabin environment.

B8.15.5.9 **Earphones, microphones, PTT's, and jacks**:

B8.15.5.9.1 The system shall be designed for operation with 600-ohm earphones and carbon-equivalent, noise-canceling boom type microphones (Gentex electret type Model 5060-2, military dynamic typeM-87/AIC with CE-100 TR preamplifier, or equivalent).

B8.15.5.9.2 J-033 and J-034 type connector jacks shall be provided at all required positions in the aircraft to accept the PJ-055B and PJ-068 type connector plugs as utilized with the headset/microphone.

B15.5.9.3 **Push-To-Talk (PTT) switches**:

B8.15.5.9.3.1 **(Air Tactical Type Three and Four only)** Separate PTT switches shall be provided for radio transmitter and ICS microphone operation at the pilot and copilot/ATGS. The pilot's PTT switches shall be mounted on the control yoke. **Note**: At the copilot/ATGS position, PTT switches other than those mounted on the flight controls must be furnished.

B8.15.5.9.3.2 **(Air Tactical Types One and Two)** Separate PTT switches shall be provided for radio transmitter and ICS microphone operation at the pilot, copilot/ATGS, and one (aft) ATGS instructor positions. The pilot's PTT switches shall be mounted on the control yoke. **Note**: At the copilot/ATGS position, PTT switches other than those mounted on the flight controls must be furnished. The aft seat passenger (fourth) position shall be provided with an ICS PTT switch, unless a voice-activated (VOX) ICS system is provided.

B8.15.5.10 **Intercommunications System (ICS).**

B8.15.5.10.1 **(Air Tactical Type Three)** An ICS shall be provided for the pilot, copilot/ATGS, and any other required positions. ICS audio shall mix with, but not mute, selected receiver audio. An ICS audio level control shall be provided for each position above. A Contractor-furnished headset with integral volume control for any required aft seat position shall satisfy this requirement. Adjustment of the ICS audio level at any position shall not affect the level at any other position. A "hot mic" capability, controlled via an activation switch or voice activation (VOX), shall be provided for each position above. ICS sidetone audio shall be provided for the earphones corresponding with the microphone in use. The ICS audio output shall be free of excessive distortion, hum, noise, and crosstalk, and shall be amplified sufficiently to facilitate ease of use in a noisy cockpit/cabin environment.

B8.15.5.10.2 **(Air Tactical Types One and Two)** An ICS shall be provided for the pilot, copilot/ATGS, and two aft cabin (ATGS instructor and one passenger) positions. ICS audio shall mix with, but not mute, selected receiver audio. An ICS audio level control shall be provided for each position above. A Contractor-furnished headset with integral volume control for each required aft seat position shall satisfy this requirement. Adjustment of the ICS audio level at any position shall not affect the level at any other position. A "hot mic" capability, controlled via an activation switch or voice activation (VOX), shall be provided for each position above. ICS sidetone audio shall be provided for the earphones corresponding with the microphone in use. The ICS audio output shall be free of excessive distortion, hum, noise, and crosstalk, and shall be amplified sufficiently to facilitate ease of use in a noisy cockpit/cabin environment.

B8.15.5.11 Although not a requirement, any aircraft meeting the requirements specified above for Air Tactical Type One (ATT-I), which is additionally equipped with a **traffic awareness and avoidance system** meeting the requirements for such specified below, shall be designated as Air Tactical Type One Plus TCAS/TCAD.

B8.15.5.11.1 The aircraft shall be equipped with a TSO'd traffic awareness and avoidance system featuring active interrogation of threat aircraft. The system shall be equipped with antennas mounted on both the top and bottom of the aircraft to minimize airframe shadowing and provide 360-degree coverage. The system shall also incorporate visual alerts for both pilot and co-pilot and an aural alerting feature which announces an alert of threat aircraft whenever such aircraft enter a zone of a programmable size with range selections from no more than two nautical miles to at least ten nautical miles around the aircraft. The aural alert output shall be interconnected to the aircraft's audio system in such a manner that all ICS-equipped positions shall receive the alert. The aircraft shall be equipped with a Multi-Function Display (MFD), GPS, or other system capable of displaying threat aircraft output data, and the system shall be interfaced to such.

B8.15.5.11.2 The system shall be installed in accordance with an STC or FAA Field Approval based upon an existing STC and the manufacturers installation manual. Installation of the system shall be accomplished by a certified avionics repair station which has been approved for such by the system's manufacturer. The system shall be maintained for continued airworthiness, but may be listed in an approved Minimum Equipment List (MEL), provided the MEL does not

permit the system to be inoperable for a period exceeding 15 days.

B8.15.5.11.3 The following systems are known to meet the above requirements:

B8.15.5.11.3.1 TCAS: Any TSO'd system which provides a range selection of 2 nautical miles or less.

B8.15.5.11.3.2 TAS: Bendix-King KTA 870, Goodrich Skywatch HP

B8.15.5.11.3.3 TCAD: Ryan International TCAD 9900BX – only when a separate, approved Multi-Funtion Display (MFD) is used to display threat aircraft data.

B8.15.5.12 ALL AIRCRAFT - Avionics installation and maintenance standards:

B8.15.5.12.1 All avionics systems used in or on the aircraft for this contract and their installation and maintenance shall comply with all manufacturer's specifications and applicable Federal Aviation Regulations contained within 14 CFR regardless of any exclusions for public aircraft allowed in 14 CFR.

B8.15.5.12.2 Strict adherence to the recommendations in FAA AC 43.13-1B Chapter 11, "Aircraft Electrical Systems", and Chapter 12, "Aircraft Avionics Systems," as well as AC 43.13-2A Chapter 1, "Structural Data", Chapter 2, "Radio Installation," and Chapter 3,"Antenna Installation," is required.

B8.15.5.12.3 All avionics systems requiring an antenna shall be installed with a properly matched, aircraft-certified antenna unless otherwise specified. Antennas shall be polarized as required by the avionics system, and have a VSWR of 2.5 to 1 or better.

B8.15.5.12.4 Avionics equipment mounting location and installation shall not interfere with passenger safety, space, and comfort. Avionics equipment shall not be mounted under seats designed for deformation during energy attenuation. In all instances, the designated areas for collapse shall be protected. Avionics equipment normally operated by both pilot and copilot/ATGS (FM-1, AUX-FM, audio control system, etc.) shall be mounted in the optimum location for the make, model, and series of aircraft offered. Mounting(s) which offer full and unrestricted movement of each control to both operators, when seated, without interference from clothing, cockpit structure, or flight controls shall be a goal in the selection of location.

B8.15.5.12.5 Although the aircraft to be provided may not be certified for IFR flight, the aircraft's static pressure system, altimeter instrument system, and automatic pressure altitude reporting system shall be maintained in accordance with the IFR requirements of 14 CFR Part 91.411 and inspected and tested every 24 calendar months as specified by 14 CFR Part 43, appendices E and F.

B8.15.5.13 Drawings: FS/OAS A-17: wiring diagram for AUX-FM connector. (Exhibit 6)

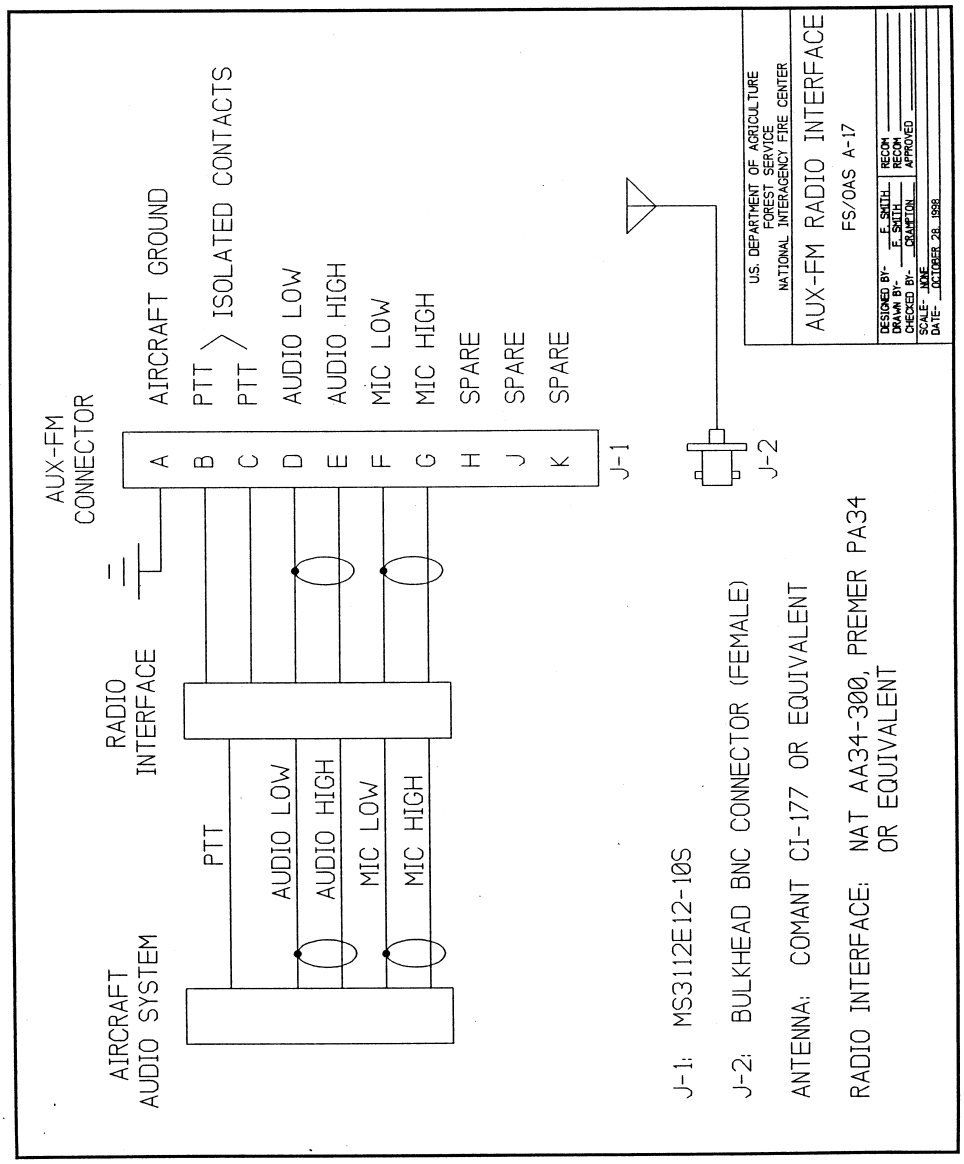
AUX-FM
CONNECTOR
AIRCRAFT
AUDIO SYSTEM
RADIO
INTERFACE
PTT
AUDIO LOW
AUDIO HIGH
MIC LOW
MIC HIGH
A
B
C
D
E
F
G
H
J
K
AIRCRAFT GROUND
PTT
PTT
ISOLATED CONTACTS
AUDIO LOW
AUDIO HIGH
MIC LOW
MIC HIGH
SPARE
SPARE
SPARE
J-1
J-2
J-1: MS3112E12-10S
J-2: BULKHEAD BNC CONNECTOR (FEMALE)
ANTENNA: COMANT CI-177 OR EQUIVALENT
RADIO INTERFACE: NAT AA34-300, PREMER PA34
OR EQUIVALENT
U.S. DEPARTMENT OF AGRICULTURE
FOREST SERVICE
NATIONAL INTERAGENCY FIRE CENTER
AUX-FM RADIO INTERFACE
FS/OAS A-17
DESIGNED BY- E. SMITH
DRAWN BY- E. SMITH
CHECKED BY- CRAMPTON
SCALE- NONE
DATE- OCTOBER 28, 1998
RECOM
RECOM
APPROVED

EXHIBIT 7

ACCEPTABLE PAINT SCHEMES

1. Starting at the blade tip, paint the first 1/6 of the blade length with gloss white. Paint the second 1/6 of the blade length with yellow or orange. Paint the third 1/6 of the blade length with gloss white. Paint the next 1/3 of the blade length with yellow or orange. Paint the remaining 1/6 of the blade length with gloss white.

W	**Y**	**W**	**Y**	**W**	**HUB**	**W**	**Y**	**W**	**Y**	**W**
1/6	**1/6**	**1/6**	**1/3**	**1/6**		**1/6**	**1/3**	**1/6**	**1/6**	**1/6**

2. One black and one white blade (two-bladed rotor systems).

3. Paint schemes previously approved under a U.S. Forest Service or Office of Aircraft Services contract.

4. High visibility paint schemes and color variations specified by manufacturer in a service bulletin, instruction, or other manufacturer-published document or text.